

REMARKS

Claims 1-3 have been amended to a form more suited to U.S. practice. The scope of the claims remains the same. The application includes claims 1-3.

With respect to the objection to the drawings, the Examiner's attention is directed to capacitor 24 and switch 23 shown in the drawing figure. Thus, the drawing figure clearly shows "a capacitor is connected in series with a switch between the first and second connecting points" as is recited in claim 1. In view of this, the objection to the drawing should be withdrawn.

With regard to the objection to claim 1, "can be" has simply been eliminated from the claim. Therefore, this objection should now be withdrawn.

With regard to the rejection of claim 1 under 35 U.S.C. 112, first paragraph, as noted above, the drawing figure clearly shows "a capacitor is connected in series with a switch". Note particularly capacitor 24 and switch 23. In view of this explanation, the rejection of the claim should now be withdrawn.

With regard to the rejection of claim 1 under 35 U.S.C. 112, second paragraph, claim 1 has been amended to require that there is a first connecting point between the series capacitor (mentioned earlier in the claim) and the starting transformer reference numeral 27), there is a second connecting point between the discharge lamp (16) and the ballast inductance (17) (the connecting point corresponds to reference numeral 26), between the two connecting points there is a capacitor (24) connected in series with a switch (23), and the capacitor (24) forms with the ballast inductance (17) a series resonant circuit which is tuned to a higher harmonic of the clock frequency (generated by control circuit 12). In view of this explanation and the amendment of the claim, the use of the word "between" should now be satisfactory. Further, "on the one hand" and "on the other hand" have been removed from claim. Finally, the Examiner will note that the "capacitor" (24) is different from the "series capacitor" (14), hence the use of a particular identifier for the "series capacitor". In view of the explanation and amendment, the rejection should now be withdrawn.

Claims 1-3 have been rejected as being anticipated by U.S. Patent 5,233,273 to Waki. This rejection is traversed.

By way of example with respect to claim 1, it should be noted that the

switches 10, 11 being connected in series between lines 7, 8 are fed by a voltage U (see attached "supplemented drawing" showing waveform and voltage U in combination with the electronic elements depicted in the drawing figure). The alternately controlled switches convert the DC voltage U into an AC voltage with a positive wave and a negative wave, wherein the amplitudes of both waves are $U/2$. The alternative voltage is coupled to the two electrodes of the discharge lamp 16 through the series capacitor 14 and the starting (ignition) transformer and the ballast inductance 17. Due to the circuitry, the alternating wave, which is nearly a sine wave, is generated.

Since the voltage amplitude reduced to $U/2$ may not be sufficient to ignite (start) the discharge lamp 16, the circuit according to the present invention is supplemented by the capacitor 24 which is (in series with switch 23) connected between the circuit points (connecting points) 26 and 27. The branch with inductance 21 and switch 22 serve a different purpose.

The capacitor 24 is selected (diminished) so as to form a series resonant circuit with ballast inductance 17 when the ignition of the lamp switch is closed. The normal alternating voltage (amplitude $U/2$) is produced by the alternately controlled switches 10, 11. Since the capacitor 24 forms a series resonant circuit with ballast inductance 17 which series resonant circuit is tuned to a higher harmonic of the clock frequency by which the switches 10, 11 are controlled, between the connecting points 26 and 27 an additional AC signal is generated having a frequency of said higher harmonic (e.g., 5th harmonic of the clock frequency). The higher harmonic AC signal is superimposed to normal AC voltage (amplitude $U/2$) generated by switches 10, 11. Due to the superposition, the peak amplitude of the alternative current is increased as shown in the attached sketch. The increased peak voltage is then sufficient to ignite the discharge lamp.

For the superposition of the signals, it is important that the series circuit of capacitor 24 and switch 23 is arranged between the circuit points 26 and 27.

U.S. Patent 5,233,273 to Waki discloses drivers 32, 33 which may be compared with switches 10, 11 of the present invention. However, the voltage fed to the discharge lamp 15 is taken from the series resonant circuit 12, 14, 13 so that the supply voltage of the discharge lamp is a resonant frequency voltage.

In order to ignite the discharge lamp 15, there is a charger circuit 23 by

which a high voltage (produced by the resonant circuit) is fed to the discharge gap 24 so that a break down occurs over discharge gap. The break down causes a pulse voltage in the primary winding of pulse (1) transformer 22, the secondary winding of which is connected to one electrode of the discharge lamp 15. The amplified pulse, forming a spike pulse for the discharge lamp, will ignite the discharge lamp.

Therefore, in sharp contrast to the present invention and contrary to the conclusions drawn in the office action, Waki et al. disclose a resonant supply voltage for the discharge lamp being generated by a series resonant circuit. Superimposed to the resonant voltage is a spike pulse for igniting the discharge lamp.

The present invention has a supply voltage which is not formed in a resonant circuit, but which is produced by switches 10, 11. The series resonant circuit of the present invention is arranged so that the resonant voltage is superimposed to the normal AC supply voltage as discussed in detail above and shown in the attached sketch.

In short, Waki do not disclose the arrangement of the starting transformer, the series capacitor, and the ballast inductance as required in claim 1.

Even if the capacitor 12 of Waki is regarded as a series capacitor and the inductance 14 is regarded as the starting transformer, resulting in regarding the secondary winding of pulse transformer 22 as a ballast inductance, there is no connection of a capacitor connected in series with a switch to the connecting point between capacitor 12 and starting transformer 14 (as is required in claim 1). Furthermore, there is no second connecting point between the discharge lamp and the ballast inductance 22 to form a series resonant circuit tuned to a higher harmonic of the clock frequency (as required in claim 1).

As such, Waki does not anticipate the claimed invention. There are differences in the circuit arrangement and there are differences in the functioning of the circuits described in the present application and described in Waki. In view of this, the rejection of the claims based on Waki should be withdrawn.

In view of the foregoing, it is respectfully requested that the application be reconsidered, that claims 1-3 be allowed, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

A provisional petition is hereby made for any extension of time necessary for the continued pendency during the life of this application. Please charge any fees for such provisional petition and any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,



Michael E. Whitham
Reg. No. 32,635

Whitham, Curtis & Christofferson, P.C.
11491 Sunset Hills Road, Suite 340
Reston, VA 20190

Tel. (703) 787-9400
Fax. (703) 787-7557

Customer No.: 30743